Decision Analytics using Artificial Intelligence and Machine Learning: An Asset Management Perspective

Abstract

Financial institutions are seeking novel ways to use voluminous data from across the globe to make important investment decisions. While existing business intelligence is mostly built on structured historical and present data available within firms, enterprises also want to use the growing unstructured data. Predictive analytics, artificial intelligence, and machine learning can be used to detect patterns hidden in structured and unstructured data to produce actionable insights, which can increase the accuracy of key investment decisions. This article recommends a framework for the adoption of machine learning and artificial intelligence in the asset management space.
Introduction

Asset management firms are looking at various ways to consolidate the voluminous data shared across the globe to make informed decisions. Artificial Intelligence (AI) and machine learning technologies such as supervised and unsupervised learning frameworks can help them analyze various sources of data, recognize patterns within the large volumes of data including images, text, and voice. The different methodologies that are commonly used are predictive and social media analytics, Big Data analytics, news and events sentiment analysis, text mining, and Natural Language Processing (NLP).

Industry Use Cases

Some areas where the asset management industry uses AI and machine learning technologies are:

**Portfolio management and optimization:** Portfolio construction and optimization, development of investment and risk strategies, and predictive forecasting of long term price movements are some use cases suitable for the effective use of AI and machine learning.

**Social media usage and analysis:** Social media analytics is primarily used for market sentiment, research analyst opinion, influencer, and demography analyses. The other emerging trend is crowd sourcing ideas to bring analysts, investment managers, and asset managers together to share opinions and monitor trends.

**Event monitoring and timeline analysis:** Fintech firms are using cutting edge technologies to consolidate unstructured data and provide actionable insights by collating data from various portfolios. The methodologies adopted include NLP, machine learning, and network analysis using sophisticated data visualization tools.

**Customer interaction and services:** Banks are using virtual private assistants to provide various services. These services include statements of accounts and funds transfer in core banking, portfolio selection, risk return analysis, and customer portfolio dashboard in the asset and wealth management space. Banks are increasingly using messaging apps that use smartbots and chatbots to interact with customers.
An Approach to Adopting AI and Machine Learning

Asset management firms can reap substantial benefits through the adoption of AI and machine learning. These technologies can help provide real-time actionable insights, and facilitate portfolio management decisions. Let’s look at the framework for some of the use cases.

Social media analytics: The firm’s portfolio holdings, social media data from Twitter, Facebook and other micro blogging sites, are consolidated to provide sentiment analysis, pattern charts, and so on for a given portfolio (see Figure 1). This is also useful in studying client demographics and preferences, and suggesting relevant products to customers.

The framework should take in data from various sources like social media and blogs, and feed it through an engine with social analytics tools to provide sentiment analysis, insights, trends, patterns and alerts. It should be customizable to the needs of the asset management firms. The solution should be equipped with user interface frameworks to facilitate interactive and customized data visualization.

Figure 1: Suggested Framework for Social Media Analytics
The solution should also include a recommendation framework that combines structured and unstructured data to provide contextual information summary, along with investment recommendations. The framework should facilitate classification and clustering of structured and unstructured data; filtering of stock recommendation reports for suitability; and unstructured data processing including real time events capture, NLP, and sentiment analysis (see Figure 2).

![Figure 2: Recommendation Framework](image)

The framework should include a customizable dashboard to enable the portfolio manager to make smart decisions. The dashboard should allow configuration of some of the preferences like sectors, demographics, and so on. The portfolio manager’s personalized dashboard should ideally include features such as (see Figure 2):

**Current holdings dashboard** displaying grouping, segregation, fund-wise holdings, and so on.

**Recommendation or events dashboard** displaying analyst reports and recommendation analytics – relevance, consolidation, social sentiment analysis of stocks based on current client holdings and firm preferences. The dashboard should be customized based on firm preferences like geography, sector, investment preferences, and mandates.
**News and event analytics:** The solution framework should gather all relevant news and events from various sources like analyst websites, blogs, and research firms, and perform analytics on them. Some of the news and event analytics that should be performed are:

- **Event categorization:** Classify news into opinions, press release, blogs, analyst views, credit rating, and provide a timeline summary of published items.

- **Event relevance:** Provide features like entity tagging (people, company, government bodies, and others); stock, sector, and geography relevance for wealth manager portfolios; novelty rating (as the first instance of news creates greater impact); news volumes (list of sources offering similar news and opinions); and events alert calendar.

- **Event impact:** Facilitate impact-mapping based on the type of risk, and corresponding impact such as high-risk (bankruptcy, CEO-related, and others) and high-impact (mergers and acquisitions, regulatory actions, divestments).

**Historical event analytics:** Perform historical analysis of events against stock performance for the past and present timelines.

**Challenges**

Firms can face certain challenges in implementing the recommended solution. These are:

- **Inadequate tools and techniques:** Many organizations lack proper tools and techniques to assimilate deeper insights from research reports. They also find it challenging to consolidate reports from multiple sources to arrive at meaningful decisions.

- **Absence of real time information:** Lack of timely integration of internal and external information including customer holdings data, portfolio manager preferences, research reports, social media data, and news can affect decision making considerably.

- **Ineffective visualization:** Appropriate visualization tools need to developed to present interactive graphs, charts for stock performance with regard to holdings, external news, and events so that they are easily interpreted by portfolio managers. Firms also need to implement NLP-based search and query facilities.
Conclusion

Financial institutions are going through a wave of change such as changing demographics and customer expectations, tighter regulations, disruptive digital technologies, and rising competition from fintech companies. To address these challenges, banks can collaborate with fintech companies that provide innovative solutions in the area of AI. However, individual firms will need to customize the solution as per their investment strategies and algorithm requirements. Firms must also consider their data and supervised learning requirements, and model accuracy while choosing the solution. Embracing newer technologies such as AI and machine learning will help banks unlock the value of data to drive informed decision making, which is imperative to business growth.
About The Author

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